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PATENT SPECIFICATION



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518,009

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PROVISIONAL SPECIFICATION

Improvements in Manhole Covers and Frames, Street Gratings and Similar Articles

I, RICHARD EDWARD WOODCOCK, Director of W. Woodcock Sons & Co. Ltd., of Phoenix Foundry, Ravenhead, St. Helens, County of Lancaster, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in manhole covers, street gratings and the like of the type in which the cover or lid is supported on blocks of rubber or other resilient material to prevent rocking of the cover or lid due to the passage of heavy vehicles.

According to the invention the blocks are supported in grooves in the surface of the manhole or like frame or in the lid or cover and project beyond the surface thereof being free to expand longitudinally thereof when pressure is applied to the surface but being a good or tight fit laterally in the grooves to prevent the blocks from being readily removed therefrom and from expanding laterally.

The wearing surface of each block is flat and horizontal and preferably of less width than the width of the groove, the sides of the block being inclined or curved outwards from its flat top to the edges of the top of the groove thus preventing any permanent set or protuberance being formed on the sides of the block after having been in use for some time and thereby reducing the resiliency of the block. In one form the block may be the shape of about two-thirds or three-quarters of a cylinder with the flat side outermost and the cross sectional shape of the groove somewhat more than a semi-

circle of the same radius as the block. In another form the block may be of truncated wedge shape with the narrower flat portion exposed and the cross sectional shape of the groove of corresponding dovetail shape. Other shapes of block and groove may however be employed.

Each groove is longer than the corresponding block to allow of longitudinal expansion of the latter and is preferably formed with a projection or the like at each end to prevent the block from readily sliding out from the groove in a longitudinal direction. Such projection however is sufficiently low to allow the block to be inserted and removed from the groove when necessary for replacement.

The invention is applicable to road manhole covers or sheet gratings whether of the hinged or "drop in" type and whether of rectangular, circular or other shape. When applied to rectangular covers the rubber blocks are preferably arranged near each corner so that the cover is supported as near each corner as conveniently possible. For circular covers a series of blocks are arranged around the periphery and as near thereto as is convenient.

The grooves in which the blocks are carried are preferably formed in the frame of the manhole but if desired they may be formed on the underside of the lid or cover.

Dated this 29th day of December, 1938.

J. OWDEN O'BRIEN & SON,
Patent Agents,
Manchester, 2.

COMPLETE SPECIFICATION

Improvements in Manhole Covers and Frames, Street Gratings and Similar Articles

I, RICHARD EDWARD WOODCOCK, Director of W. Woodcock Sons & Co. Ltd., of Phoenix Foundry, Ravenhead, St. Helens, County of Lancaster, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly

described and ascertained in and by the following statement:—

This invention relates to covers and frames for street manholes, gratings, gully-grids and the like of the type in which the cover or lid rests on or is supported on blocks or pads of rubber fitted

in the frame to prevent rocking and noise and absorb shock consequent upon the passage of the wheels of vehicles.

It is known to rest or support the lids, gratings, or grids of street manholes or gulleys on blocks of rubber let into or secured to the frame but as hitherto constructed the rubber blocks have been held tightly compressed no allowance having been made for the expansion of the rubber blocks when heavy loads pressed upon them resulting in failure. I have found however that it is necessary while holding the rubber contact block firmly by its sides to provide room or space into which the rubber contact block can expand longitudinally when weight is applied to it.

According to the invention the rubber contact blocks between the frame and lid are cylindrical or oblong of dovetail or other cross section flat on the contact surface and are secured laterally in recesses in the frame of corresponding shape from which the contact blocks project the said recesses being longer than the contact blocks providing room or space at one or both ends into which the blocks may expand longitudinally when weight or pressure is applied.

Instead of being fitted into the frame such rubber contact blocks may be similarly fitted into recesses in the lid, grating, or grid and rest upon the frame.

The invention is illustrated in the accompanying drawings and will be described with reference thereto.

Fig. 1. Plan of circular cover and frame for street manhole or gully the lid A being partly removed showing the frame B and the rubber contact blocks C in position.

Fig. 2. Enlarged plan of part of frame B showing one of the rubber contact blocks C in position in recess c.

Fig. 3. Enlarged transverse section through the frame B and contact block C on line 3—3 Figs. 1 and 2.

Fig. 4. Plan of rectangular type of cover and frame B for street manhole or gully, the lid A being removed showing the rubber contact blocks C in position.

Fig. 5. Transverse section on line 5—5 Fig. 4.

Fig. 6. Section on line 6—6 Fig. 4.

In the form shown in Figs. 1 to 3 the lid, grating or grid A of a street manhole or gully is made circular to fit over or into a circular opening in the frame B which is secured upon the top of the manhole or the lid or grid A may be made rectangular and the opening in the frame B also rectangular to correspond. The frame B is constructed with a number of radially projecting horizontal bearings or supports b for the lid or grid A.

Each bearing or support b is formed with a recess or pocket c into which is fitted a contact block C of tough rubber upon which the lid or grid A rests when closed, or the frame B may be constructed with an inner flange to support the lid or grid A provided with a number of recesses or pockets into which are fitted contact blocks C of tough rubber on which the lid rests when closed. According to the invention in the form shown each rubber contact block C is cylindrical of circular cross section flat on the contact surface and the recess or pocket c is of similar circular shape to receive it but longer than the contact block B to allow room or space for longitudinal expansion. Each cylindrical rubber contact block C projects from the recess c and is firmly held in place by lateral pressure due to the width of the transverse centre line of the rubber contact block C being larger than the opening at the top of the recess c. When the weight is transmitted through the lid or grid A on to the contact faces of the rubber contact blocks C the blocks expand or elongate in their recesses and immediately the load is removed they resume their original positions.

In the form shown in Figs. 4 to 6 the lid, grid, or grating A of a street manhole or gully is rectangular to fit over or into a rectangular opening in the frame B which is secured upon the top of the manhole. The frame B is constructed with four horizontal bearings or supports b one at each corner for the lid or grid A. Each bearing or support b is formed with a recess or pocket c into which is fitted a contact block C of tough rubber upon which the lid or grid A rests when closed. According to the invention in the form shown each rubber contact block C is cylindrical of circular cross section flat on the contact surface and the recess or pocket c is of similar circular shape to receive it but longer than the contact block B to allow room or space for longitudinal expansion. Each cylindrical rubber contact block C projects from the recess c and is firmly held in place by lateral pressure due to the width of the transverse centre line of the rubber contact block C being larger than the opening at the top of the recess c. When the weight is transmitted through the lid or grid A on to the contact faces of the rubber contact blocks C the blocks expand or elongate in their recesses and immediately the load is removed they resume their original positions.

In either the circular or rectangular form of the manhole cover the rubber contact blocks may be oblong of dove-tail or other cross section with a flat contact sur-

face fitted into recesses of corresponding shape, and the rubber contact blocks instead of being fitted into the frame B may be similarly fitted into recesses in the under side of lid or grid to rest upon horizontal projections or flanges on the frame.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A cover and frame for street man-holes or gullys having rubber contact blocks disposed between the frame and the lid, the blocks being cylindrical of circular cross section, or oblong of dovetail or other cross section, flat on the contact surface and secured laterally in recesses of corresponding shape in the frame or lid from which the contact blocks project, the said recesses being longer than the contact blocks providing room or space at one or both ends into which the blocks may expand longitudinally when weight or pressure is applied.

2. A cover and frame for street man-holes or gullys constructed with a frame having a circular opening, a circular lid or grid to fit into or over the circular opening in the frame, and a number of radially projecting horizontal bearings or supports for the lid to rest upon each formed with a recess and fitted with a tough rubber contact block cylindrical of circular cross section and flat on the contact surface the recess being of corresponding shape but longer than the contact block with room or space at one or both ends to permit the contact block to expand longitudinally when weight or pressure is applied.

3. A cover and frame for street man-holes or gullys constructed with a frame having a central opening (circular or rectangular) a lid or grid of correspond-

ing shape to fit into or over the central opening, a number of projecting lugs, or a flange within the central opening to support the lid and a number of recesses formed in the lugs or flange each fitted with a tough rubber contact block cylindrical of circular cross section or oblong of dovetail or other cross section flat on the contact surface each recess being of corresponding shape but longer than the contact block with room or space at one or both ends to permit the contact block to expand longitudinally when weight or pressure is applied.

4. A cover and frame for street man-holes or gullys constructed with a rectangular frame, a rectangular lid or grid, and four horizontal bearings or supports one at each corner of the frame for the lid or grid, each bearing or support being formed with a recess or pocket fitted with a tough rubber contact block cylindrical of circular cross section or oblong of dovetail or other cross section flat on the contact surface each recess being of corresponding shape but longer than the contact block with room or space at one or both ends to permit the contact block to expand longitudinally when weight or pressure is applied.

5. A cover and frame for street man-holes or gullys such as in any of the previous claims in which the tough rubber contact blocks of cylindrical dovetail or other form flat on the contact face are fitted into recesses of corresponding shape longer than the contact blocks formed in the underside of the lid or grid.

6. A cover and frame for street man-holes or gullys constructed substantially as shown and described with reference to Figs. 1 to 3 or Figs. 4 to 6 of the accompanying drawings.

Dated this 29th day of August, 1939.

J. OWDEN O'BRIEN & SON,
Patent Agents,
Manchester, 2.

[This Drawing is a reproduction of the Original on a reduced scale.]

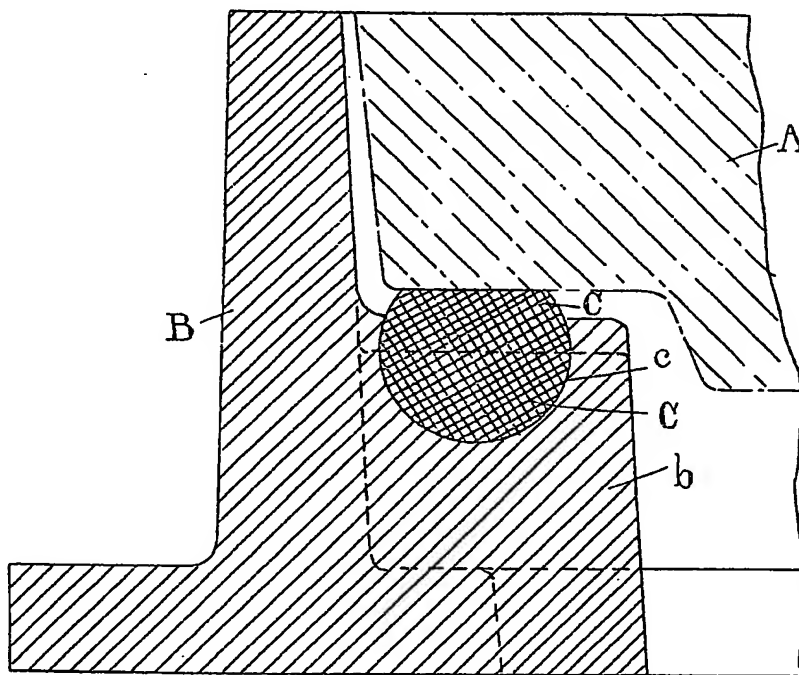


Fig. 3.

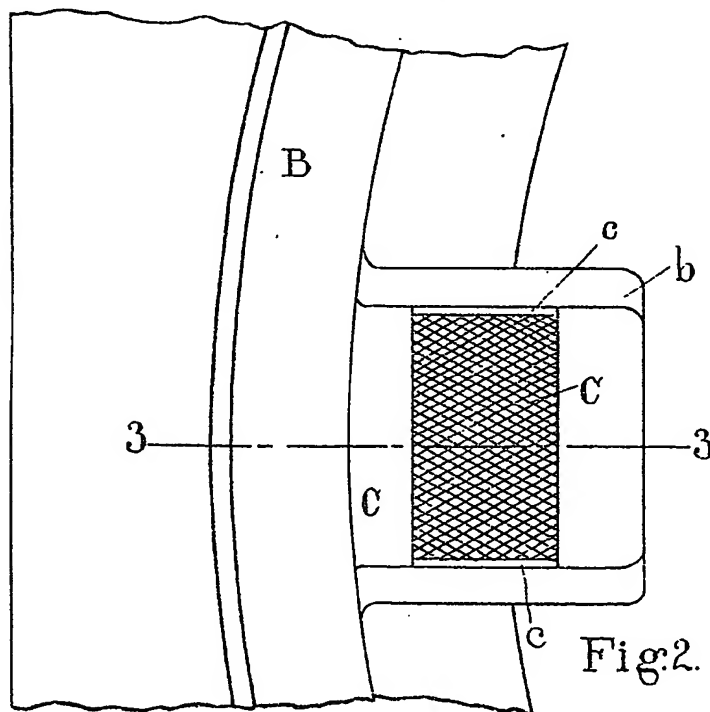
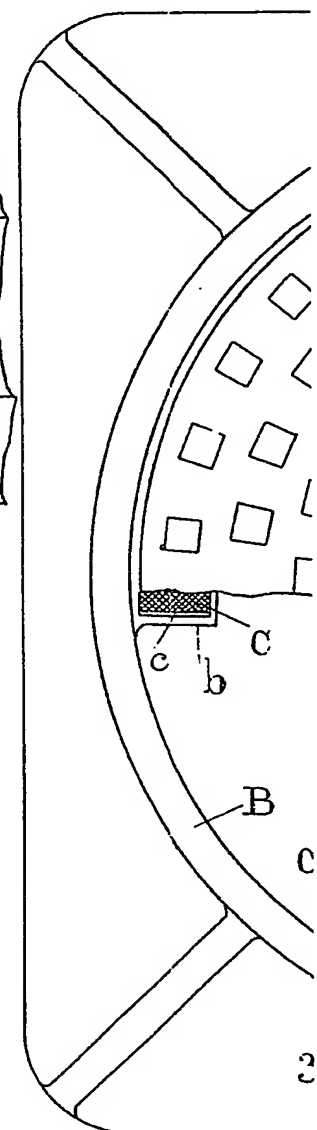


Fig. 2.



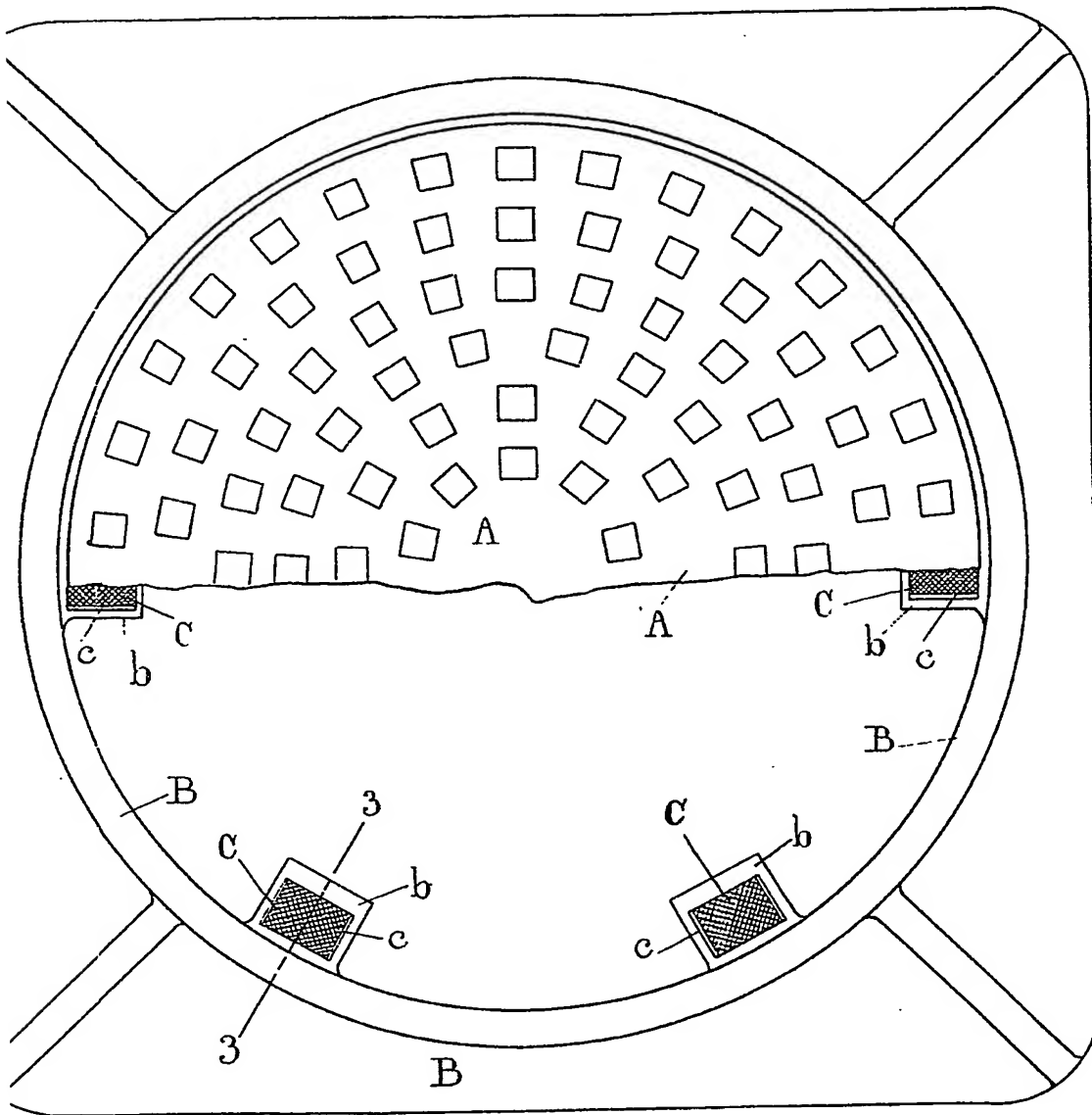


Fig 1

518,009 COMPLETE SPECIFICATION

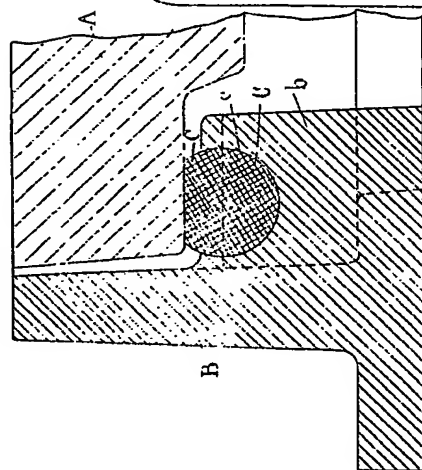


Fig. 3.

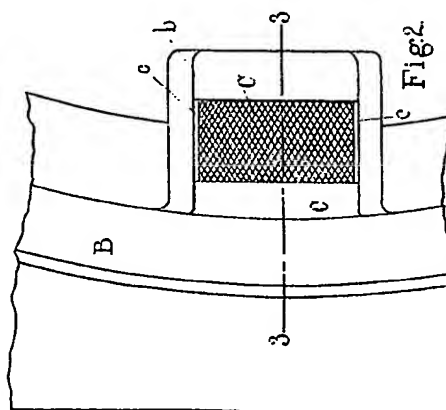


Fig. 2.

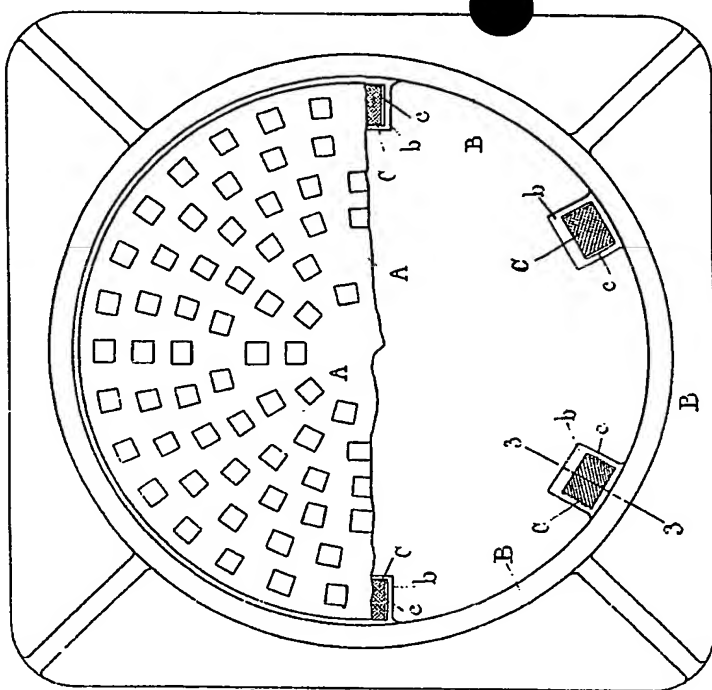


Fig. 1.

[This Drawing is a reproduction of the Original on a reduced scale]

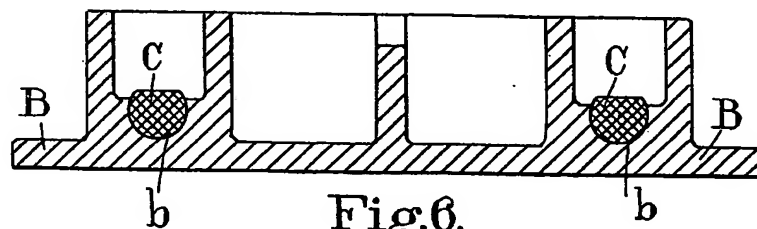


Fig. 6.

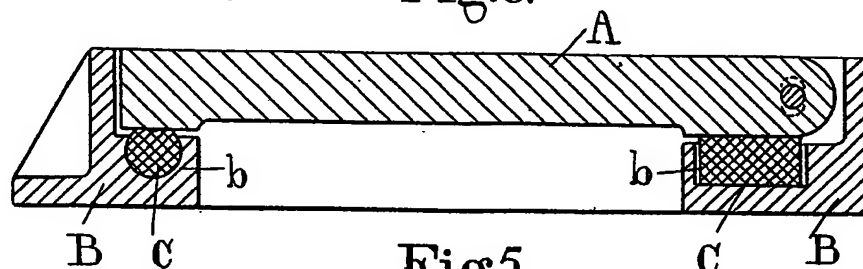


Fig. 5.

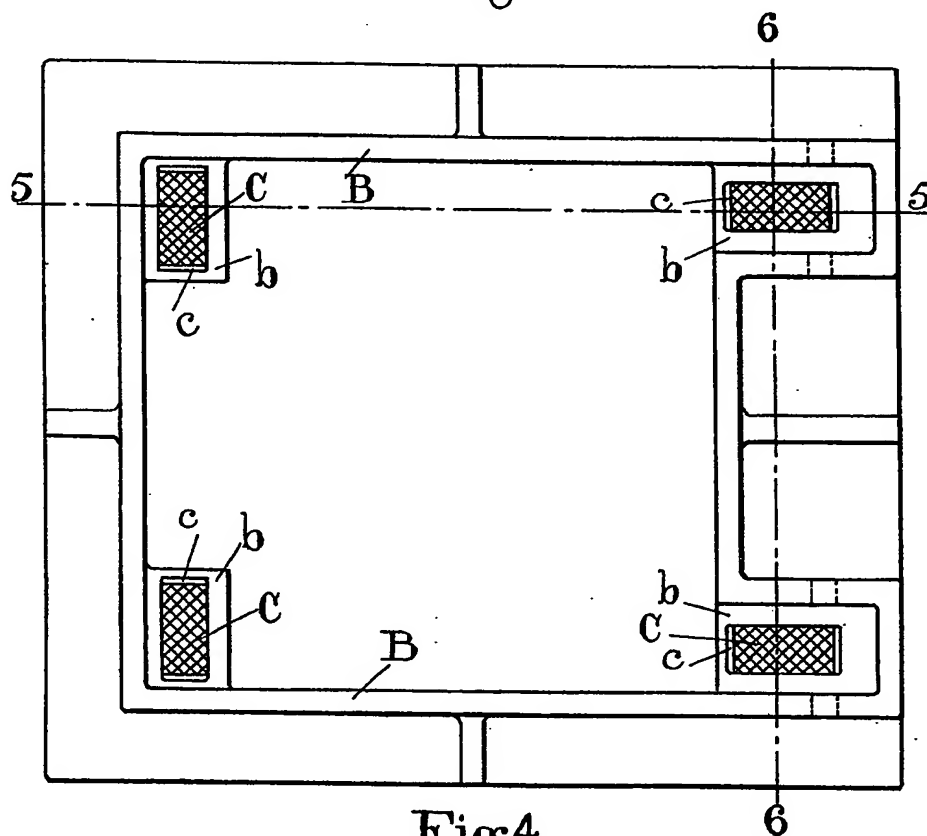


Fig. 4.

[This Drawing is a reproduction of the Original on a reduced scale.]